

REMARKS/ARGUMENTS

Claims 1-22 were pending in this application. By way of the above amendments, claims 1, 8, 9, and 14 have been amended and claim 23 has been added. Accordingly, claims 1-23 are pending. Within the Office Action, claims 1-13 are rejected under 35 U.S.C. § 102(e), and claims 14-22 are rejected under 35 U.S.C. § 103(a). The Applicants respectfully request reconsideration in light of the amendments made above and the arguments made below.

The present invention

One embodiment of the present invention is directed to a back-channel communication system for coordinating routing decisions. A system in accordance with the present invention comprises a plurality of routing intelligent units that each controls a subset of networking devices, such as routers. The routing intelligent units assert routes to the routers under their control, such as by using the Border Gateway Protocol (BGP). The routing intelligence units take measurements of the performance of routes traversing edge routes and convert them into scores that rate the quality of the end-to-end user performance. (Specification at 9, lines 3-5) Routing parameters are exchanged among the routing intelligent units so that more paths can be analyzed for transmitting data through the system. Each routing intelligent unit is able to determine routing information for the subset of routes it controls. The process of determining routing information is thus distributed, resulting in more efficient route determinations and distribution.

Rejections under 35 U.S.C. § 102(e)

Rejections in light of Raciborski

Within the Office Action, claims 1-13 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,658,000 to Raciborski et al. The Applicants respectfully traverse this rejection.

Raciborski is directed to a system for and method of distributing content objects over the Internet to client hosts. Content objects can be data files, video images, streaming videos, and the like. To distribute content objects to client hosts with a sufficient quality of service (QoS), content objects are distributed at various locations across the Internet. When a user on a client host requests a copy of a content object, the system determines the location of a server (called a

content exchange) that contains a copy and is able to transmit the copy to the client host with an acceptable QoS. QoS is based on any number of criteria such as a distance from the server to the client host, a bandwidth between the server and the client host, and a response time at a port on the server, to name a few criteria. A content exchange in Raciborski is thus used to download content objects. It is not used to transmit routing performance information to a client or any other host.

As part of its system, Raciborski also discloses a server manager, which regularly receives status from content exchanges. (Raciborski, Figure 1, and col. 7, lines 31-32) Even if, as suggested throughout the Office Action, the content exchanges are decision makers (i.e., routing intelligence units), they do not exchange routing performance information among themselves, as recited in the claims of the present invention. Instead, they transmit status information to a server manager.

Claim 1 is directed to a communications back-channel for coordinating routing decisions. The communications back channel comprises a plurality of networking devices and a plurality of routing intelligence units. Each of the plurality of routing intelligence units includes software for controlling a distinct subset of the plurality of networking devices. Each of the plurality of routing intelligence units further includes one or more processes for controlling the distinct subset of networking devices and one or more coordination processes for exchanging routing performance information with the plurality of routing intelligence units.

As explained above, Raciborski does not disclose routing intelligence units that include one or more coordination processes for *exchanging* routing performance information with the plurality of routing intelligence units.

Within the Office Action, in rejecting claims 9 and 10, it is stated that Raciborski discloses performance scores for routes at column 5, lines 33-43, and column 8, lines 18-30. However, the Applicants find no mention of performance scores here.

Because Raciborski does not disclose each element of claim 1, claim 1 is allowable over Raciborski. Claims 2-13 all depend on claim 1 and thus are all allowable as depending on an allowable base claim.

Claims 2-13 are allowable for other reasons. For example, within the Office Action, several sections of Raciborski are cited as disclosing “wherein the plurality of communication links are dedicated exclusively for exchanging routing parameters between the plurality of routing intelligence units,” as recited in claim 11. The Applicants are unable to find any discussion in Raciborski of using dedicated links.

Rejections in light of Chen

Within the Office Action, claims 1-13 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,553,423 to Chen. The Applicants respectfully traverse these rejections.

Chen is directed to a system for and a method of announcing new capabilities of a router without having to close and reopen a session between the router and its neighboring peer routers. In Figure 4, Chen discloses autonomous routers connected within autonomous systems (ASs) by interdomain routers (420) and ASs connected to one another by intradomain routers (500). Chen explains generally that the interdomain routers exchange routing and reachability information. (Chen, col. 5, lines 13-16) At column 5, lines 43-46, Chen incorporates a document that describes using Network Layer Reachability Information (NLRI), which includes the prefixes of address that are able to be reached. This routing information merely includes Internet Protocol (IP) addresses and does not include routing performance information, such as recited in claim 1. For at least this reason, claim 1 is allowable over Chen. Because claims 2-13 all depend on claim 1, they too are all allowable as depending on an allowable base claim.

Rejections under 35 U.S.C. § 103(a)

Within the Office Action, claims 14-22 are rejected under 35 U.S.C. § 103(a) as obvious over either Raciborski or Chen in view of U.S. Patent No. 6,185,598 to Farber. The Applicants respectfully traverse these rejections.

Claim 14 is directed to a method of exchanging routing parameters among a plurality of decision makers. Each decision maker controls a distinct subset of a plurality of routers, and the plurality of decision makers are in communication via a dedicated mesh. The method comprises asserting a first plurality of preferred routes for a first plurality of prefixes to the subset of routers and, concurrent with the asserting the first plurality of preferred routes, sending a plurality of local performance scores for the first plurality of routes to the plurality of decision makers via the dedicated mesh. Claim 14 has been amended to more clearly recite that the performance scores are generated from performance measurements.

In paragraph 18 of the Office Action, it is again stated that Raciborski discloses exchanging routing parameters, citing column 5, lines 4-12. Here, Raciborski merely describes how to cache content objects to improve a QoS. It is also stated that Raciborski discloses “concurrent with asserting the first plurality of preferred routes, sending a plurality of local performance scores for the first plurality of decision makers via the dedicated mesh.” First,

Raciborski does not disclose sending a plurality of local performance scores to a plurality of decision makers. Furthermore, Raciborski does not disclose concurrently asserting routes and sending performance scores, as recited in claim 14. At column 12, line 33, cited within the Office Action, Raciborski discusses concurrent links to a content exchange. This does not describe performing any steps concurrently. Any reliance on Raciborski here is misplaced.

Farber is directed to distributing information on an origin server to repeaters, also called replicated servers. As Farber explains at column 2, line 64, to column 3, line 13, when a client requests a resource from an origin server, a reflector intercepts the request and either reflects the request by forwarding it to a repeater or handles the request locally by forwarding it to the origin server. The system calculates costs for transactions between a client and a repeater and forwards requests to repeaters in a group with the lowest cost to the client. The system maintains and updates a table defining the costs between each group and each repeater. (Col. 3, lines 31-34)

Each repeater sends overall current load and capacity values to a master repeater, which stores them in a Load Table. Changes in the Load Table are distributed to each reflector (col. 11, lines 42-46, and col. 12, lines 27-29).

The reflector mechanism described in Farber is not a route reflector mechanism as defined in the claims of the present invention. Those skilled in the art will recognize that a route reflector, as recited in claims of the present invention, refers to a BGP speaker that advertises an iBGP-learned route to another iBGP peer, thereby alleviating the need for a full-mesh iBGP.

As explained above, Raciborski does not disclose exchanging routing parameters among decision makers. Raciborski does not disclose asserting preferred routes to a subset of routers. At column 5, lines 4-12, cited within the Office Action, Raciborski describes how a bandwidth is determined and how to cache content objects. Raciborski does not disclose concurrently asserting routes and sending performance scores using a dedicated mesh. Raciborski does not disclose dedicated links at all. The Internet 120 of Figure 1, cited with the Office Action, cannot be considered a dedicated link. The other portions of Raciborski cited within the Office Action (col. 9, lines 33-49; col. 10, lines 21-34; and col. 12, lines 27-39) make *no* mention of a dedicated mesh.

Within the Office Action, it stated that “Raciborski does not explicitly detail asserting a first plurality of preferred routes for a first plurality of prefixes to the subset of routers.” It is then stated that Farber discloses a BGP router table (citing col. 13, lines 40-53), a reflector mechanism (citing col. 4, lines 14-29, and Figure 1), a subset of the Internet (citing col. 5, lines 40-50), performance scores (citing col. 12, lines 52-58), and prefixing a distinct string of HTTP

tag (citing col. 23, lines 25-35).

Farber describes using a procedure, NetMap, for determining the cost of using certain links. NetMap uses links stored in BGP router tables to determine links between groups of users (col. 13, lines 40-53) so that the costs of these links can be determined. NetMap does not assert a first plurality of routes to routers. The reflector mechanism disclosed in Farber reflects client requests to a repeater and does not function as a route reflector. The discussion of the subset of the Internet (col. 5, lines 40-50) merely discusses the use of Uniform Resource Locators (URLs). Any costs determined (col. 12, lines 52-58) are not sent to decision makers. Finally, at column 23, lines 23-35, Farber describes *adding a string to the beginning* of an HTTP tag. This use of *prefixing* is different from that claimed in the present invention. The term *prefixes* used in the claims of the present invention refers to a portion of an Internet Protocol (IP) address, not prefixing—that is, prepending—a string to an HTTP tag.

In short, neither Raciborski nor Farber, either alone or in combination, discloses each element of the claims of the present invention. Accordingly, claim 14 is allowable over Raciborski combined with Farber.

In a similar manner, Chen does not disclose “sending a plurality of local performance scores generated from performance measurements for the first plurality of routes to the plurality of decision makers via the dedicated mesh,” as recited in claim 14. Nor does Chen disclose performing this step concurrent with asserting a first plurality of preferred routes. Chen’s description of peer connections, cited within the Office Action as disclosing this configuration (col. 6, lines 17-30), merely describes the relationship between routers, not the concurrency of performing steps.

Furthermore, for the same reasons explained above, Farber does not disclose the remaining elements of claim 14. Accordingly, claim 14 is also allowable over Raciborski combined with Farber.

Claims 15-22 all depend on claim 14. Because claim 14 is allowable over any combination of Raciborski, Chen, and Farber, claims 15-22 are all also allowable as depending on an allowable base claim.

The new claim 23 is allowable.

The new independent claim 23 is similar to claim 1, but specifically recites a router instead of a more general networking device. Accordingly, claim 23 is allowable for at least the same reasons as claim 1.

CONCLUSION

For the reasons given above, the Applicants respectfully submit that claims 1-23 are in condition for allowance, and allowance at an early date would be appreciated. If the Examiner has any questions or comments, the Examiner is encouraged to call the undersigned at (408) 530-9700 so that any outstanding issues can be quickly and efficiently resolved.

Respectfully submitted,
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Dated: 12-16-05

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CERTIFICATE OF MAILING (37 CFR § 1.8(a))

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